

A BREEDING EXPERIMENT WITH *MANIOLA JURTINA* L. AB. *FRACTA* ZWEIGLT (LEP.: SATYRIDAE)

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Maniola jurtina ab. *fracta* Zweigl is a scarce and highly distinctive aberration. During fieldwork over 17 years I have found it in seven separate locations in Dorset, Wiltshire, Somerset and the Isles of Scilly. It has occurred in all grades of expression, from examples barely distinguishable from the type form, through to the most extreme expressions (Fig. 8).

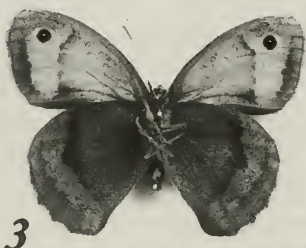
M. jurtina ab. *fracta* can be described, in the fully developed form, as having a single strip of dark scaling crossing the pale median band on the underside of the hindwings (Russwurm, 1978). This always runs along the anterior side of vein 4 (English numbering system) or vein M3 (using the Universal Comstock System). This connects the darker basal and marginal areas (Figs 5–8). R. M. Craske, who has a lifelong experience of this species and its varieties in the field, has described the form as having a 'great stab right across the pale band'. I can think of no more graphic description than that. In the field, extreme examples invariably give the impression of a type specimen with a heavy tear in the wing. Only close inspection reveals it to be this lovely aberration. It occurs in both sexes, although the male specimen illustrated (Fig. 7) is the only example of that sex (compared to over twenty female specimens) that I have found, despite careful scrutiny.

In some specimens the variation may be visible on the upper surface of the hindwings (Fig. 2). Some female specimens also show ab. *antiauirolancea* Leeds on the upperside of the forewings (Fig. 2). This consists of a reduction of the fulvous coloration between the veins. The most extreme expressions have only a ring of fulvous remaining around the apical spot (although the fulvous in the 'cell' area remains, as the effect of the aberrant genes seems to be restricted to the median band area of the wings only). This variation also occurs on the upperside of ab. *postmultifidus* Lipscomb. *Postmultifidus* is described as having 'the top half of the band on the underside of the hindwings entire, the lower half broken up into well separated segments' (Lipscomb, 1980). While I have captured and bred examples of *postmultifidus* showing the extreme expression of *antiauirolancea* on the upperside, I have not seen extreme *antiauirolancea* on a specimen of *fracta*.

While some satyrid aberrations may occur as analogous forms across a range of different species which share the relevant pattern elements (e.g. variation in submedian spot size, shape or number) there seems to be nothing similar to *fracta* recorded in those satyrid species which share the hindwing underside band pattern element.

The original female for the breeding experiment (Fig. 1) was captured on 1 July 1995 in a North Dorset hay meadow where this aberration has appeared regularly since 1983. It is clearly a very minor expression of the form with just the first sign of the dark strip pushing into the median band from the basal area of darker coloration.

Approximately 250 eggs were laid, resulting in an F₁ brood of 86 adults in June 1996. The brood was graded from typical specimens to those with the median band distinctly narrowed (much like the F₂ specimens in Figs 3 and 4). There was no sign of any development of the *fracta* hindwing cross-band. A number of these forms were paired and about 1000 eggs were laid.



Figs 1-8. *Maniola jurtina* ab. *fracta* 1. Female transitional to *fracta*. Captured Dorset 1.vii.1995. 2. Female ab. *fracta* + *antianrolancea* Bred F₂, v. 1997. 3. Male transitional to *fracta*. Bred F₂ v. 1997. 4. Female transitional to *fracta*. Bred F₂ v. 1997. 5. Female *fracta*. Bred F₂ v. 1997. 6. Female *fracta*. Bred F₂ v. 1997. 7. Male *fracta*. Captured Dorset 11.vii.1983. 8. Female *fracta*. Captured Dorset 12.vii.1983. All specimens coll. R. Barrington.

The F_2 generation contained 118 adults (45 male and 73 female). The brood was graded from type through to full *fracta* (Figs 5 and 6), with typical insects predominating. Three females were fully developed *fracta* and two others nearly so. Two males were weak expressions of *fracta*. The female specimens of *fracta*, and a number of the transitional female forms, were also *antiauro lancea*, though none was extreme (Fig. 2).

The hindwing median band width in specimens of *fracta* ranges from Fig. 8 in which the width is unaffected, through to the bred examples (Figs 5 and 6) in which the band is considerably narrowed, so the dark *fracta* cross-band is shorter. Fieldwork throws up all degrees of median band width between these two extremes, so probably this variable narrowing is part of the expression of *fracta*. In my experience full *fracta* with the median band of normal width (i.e. Fig. 8) is the rarest of all expressions.

The above results suggests that *fracta* is controlled by a multifactorial gene complex, in which a number of genes operate in an additive manner to give broods graded from type to full aberrations. There is no differentiation into distinct groups as there is when an aberration is under the control of a single mutant gene.

REFERENCES

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FIELD MEETING REPORT

Sidney Wood, Dunsfold, Surrey
20 June 1998

Leader: **John Phillips**. Totally against the trend of extremely adverse weather conditions being experienced in June, the day chosen for this meeting turned out to be virtually ideal, being hot although overcast during the afternoon, but humid during the evening.

Four members plus the leader attended the afternoon session including Gail and Stephen Jeffcoate, who are responsible for managing nearby Oaken Wood Reserve on behalf of Surrey & SW London Branch of Butterfly Conservation, and David Baldock who initiated the group into the mysteries of the Hymenoptera. Butterflies were conspicuous by their absence, the only species of real interest being a female Wood White *Leptidea sinapis* (L.); this complex of woodland being one of its well known strongholds.

Bees and wasps seemed to fare somewhat better however, although, the only species of note was *Ectemnius borealis* (Zett.) RDB3 taken at umbellifer flower; nationally this is only known from about five sites in East Hampshire and West Sussex and was first recorded for Surrey in 1996 in Botany Bay, a few miles east of Sidney Wood.